

SDMS Document ID

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FAX COVER SHEET

To: Tien Nguyen Date: 4/17/00
Fax #: 312 6962
From: Les Sims Phone #: 312 6820
Subject: Inorganic Results (Rico 1996)
No. of Pages (including this one) 5 Sender: SIMS

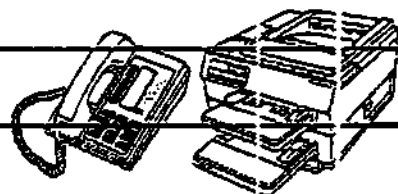
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NOTES: Tien

Here are the tables you requested. If you
need surface water & source data let me know.

Thanks

Les



2350404 24008 MHDD73 RA-SE-10 2.8 miles downstream of outfall 002 on the Dolores River	2350403 24008 MHDD72 RA-SE-11 5.3 miles downstream of outfall 002 on the Dolores River
4480 J	3080 J
1.3 U	0.91 U
10.3 J	6.4 J
90.8	(60.2)
[0.58]	[0.40]
[1.1]	[1.2]
23100 J	13900 J
6.3	4.3
[5.0]	[3.4]
27.3	20.2
14900 J	9350 J
65.2 J	52.1 J
6780	2980
322 J	478 J
0.21 U	0.15 U
(14.8)	[7.4]
[1660]	[1330]
[1.3]	0.61 U
0.43 U	0.30 U
116 UJ	71.1 UJ
1.4 UJ	0.70 UJ
(12.9)	[8.6]
232 J	247 J
0.32 U	0.23 U

TABLE 18

Sediment from Dolores River - Inorganic Sample Results
 Concentrations in mg/kg

Sample ID: Case #: Traffic Report #: Sample Location: Location Description:	2352702 24008 MHCQ95 RA-SE-01 Upstream of site influences on the Dolores River	2350425 24008 MHDD94 RA-SE-02 Adjacent to tailings piles on the Dolores River	2350422 24008 MHDD91 RA-SE-03 Confluence of drainage from settling ponds and the Dolores River	2350417 24008 MHDD86 RA-SE-04 Confluence of Silver Creek and the Dolores River	2350410 24008 MHDD79 RA-SE-08 1.7 miles downstream of outfall 002 on the Dolores River	2350411 24008 MHDD80 RA-SE-09 1.9 miles downstream of outfall 002 on the Dolores River
Aluminum	4630 J	6300 J	2650 J	3220 J	6240 J	7020 J
Antimony	0.85 U	0.81 U	0.78 U	1.1 U	(1.3)	1.0 U
Arsenic	25.1 J	9.8 J	6.2 J	9.2 J	16.5 J	18.2 J
Barium	79.3	72.6	52.9	(43.0)	(47.8)	117
Beryllium	0.45 UJ	(0.55)	(0.51)	0.37 U	(0.89)	(0.76)
Cadmium	(0.62)	0.27 U	(0.67)	(0.62)	(1.4)	4.2
Calcium	26900 J	5130 J	5490 J	1710 J	2460 J	15500 J
Chromium	5.2	8.2	2.8	(3.7)	7.5	9.2
Cobalt	(5.0)	(5.4)	(5.2)	(4.8)	(4.9)	(8.9)
Copper	42.1	35.6	8.1	25.9	★ 112 (0.28)	★ 66.5 (0.34)
Iron	15300 J	15200 J	7700 J	10200 J	25200 J	22200 J
Lead	69.8 J	28.4 J	14.5 J	192 J	★ 223 J (0.28)	★ 277 J (0.34)
Magnesium	3310	3680	2090	(1840)	3760	6460
Manganese	400 J	504 J	966 J	821 J	596 J	★ 1210 J (0.67)
Mercury	0.14 U	0.14 U	0.13 U	0.19 U	0.14 U	0.17 U
Nickel	(8.9)	11.2	(7.6)	(6.3)	(9.7)	16.1
Potassium	1670	(1330)	(755)	(1400)	1540	2490
Selenium	0.56 U	0.66 J	0.52 U	0.74 U	0.56 U	0.67 U
Silver	0.28 U	(0.28)	0.26 U	0.37 U	(0.60)	(0.98) (0.34)
Sodium	74.1 UJ	198 UJ	98.5 UJ	204 UJ	73.1 UJ	47.7 U
Thallium	1.1 UJ	0.68 UJ	0.52 U	0.74 U	1.3 UJ	1.8 UJ
Vanadium	(12.4)	15.0	(7.2)	(9.1)	14.5	19.7
Zinc	133 J	107 J	131 J	103 J	★ 429 J (1.41)	★ 722 J (1.68)
Cyanide	0.21 U	0.20 U	0.19 U	0.28 U	0.21 U	0.25 U

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 () Sample Quantitation Limit (SQL).
 ★ Sample value are \geq to the SQL, $\geq 3x$ the background concentration and $\geq 5x$ all blank concentrations.

ganic Sample Results
ng/kg

RA-SE-07 24008 MHDD83 Silver Creek, just before confluence with Dolores River		
34.62)	5500 J	
	0.71 U	
5.13)	★ 22.0 J	(0.47)
	76.8	
2.56)	[0.67]	
2.56)	6.4	
12.82)	3810 J	
	9.1	
	[5.3]	
2.56)	★ 255	(0.24)
13.05)	★ 30400 J	(2.13)
2.56)	★ 1540 J	(0.24)
	4910	
(5.0)	★ 1580 J	(0.47)
	0.12 U	
2.56)	9.6	
	1280 J	
5.13)	0.77 J	
2.56)	★ (2.3)	(0.24)
	33.5 UJ	
	1.5 UJ	
	11.9	
12.5)	★ 2010 J	(1.18)
1.002)	0.18 U	

TABLE 14

Aqueous from Silver Creek - Inorganic Sample Results
 Concentrations in mg/l

Sediment from Silver Creek - Inorganic Sample Results
 Concentrations in mg/l

Sample ID: Case #: Traffic Report: Sample Location:	RA-SW-05 24008 MHDD96 Silver Creek Background	RA-SW-06 24008 MHDD87 Silver Creek below tailings piles	RA-SW-07 24008 MHDD82 Silver Creek, just before confluence with Dolores River
Aluminum	16.0 UJ	94.2 UJ (0.2)	20.6 UJ
Antimony	3.0 U	3.0 U	3.0 U
Arsenic	2.0 U	2.0 U	2.0 U
Barium	[123]	[95.8]	[87.9]
Beryllium	1.0 U	1.0 U	1.0 U
Cadmium	1.0 U	[1.8]	[2.1]
Calcium	33800	54700	69100
Chromium	1.0 U	1.0 U	1.0 U
Cobalt	1.0 U	1.0 U	1.0 U
Copper	1.0 U	[2.2]	[1.8]
Iron	10.0 U	★ 919 (0.1)	★ 159 (0.1)
Lead	1.0 U	3.9 (0.003)	[1.1]
Magnesium	[3380]	7120	7890
Manganese	1.0 U	★ 484 (0.015)	★ 192 (0.015)
Mercury	0.20 U	0.20 U	0.20 U
Nickel	1.0 U	[1.0]	[1.0]
Potassium	834 U	[2100]	[3290] (0.5)
Selenium	2.0 U	2.0 U	2.0 U
Silver	1.0 U	1.0 U	1.0 U
Sodium	1500 UJ	1560 UJ	1760 UJ
Thallium	2.0 U	2.0 U	2.0 U
Vanadium	1.0 U	1.0 U	1.0 U
Zinc	4.0 UJ	★ 1060 (0.02)	★ 720 (0.02)
Cyanide	3.0 U	3.0 U	3.0 U

Sample ID: Case #: Traffic Report: Sample Location:	RA-SE-05 24008 MHDD97 Silver Creek background	RA-SE-06 24008 MHDD88 Silver Creek below tailings pile
Aluminum	3820 J	★ 17300 J
Antimony	1.1 U	7.7 UJ
Arsenic	6.9 J	★ 52.6 J
Barium	133	[58.0]
Beryllium	[0.45]	★ 16.9
Cadmium	0.38 U	★ 17.8 J
Calcium	3660 J	★ 16900 J
Chromium	6.3	7.4 UJ
Cobalt	[3.3]	[6.1]
Copper	[6.7]	★ 123
Iron	8380 J	★ 225000 J
Lead	13.2 J	★ 2000 J
Magnesium	2280	[1360]
Manganese	343 J	★ 3060 J
Mercury	0.19 U	1.3 U
Nickel	[5.6]	★ 22.7 J
Potassium	[1720]	3450 J
Selenium	0.76 U	★ 5.1
Silver	0.38 U	★ 3.9 J
Sodium	165 UJ	364 UJ
Thallium	0.76 U	11.9 UJ
Vanadium	[10.8]	[5.7]
Zinc	30.8 J	★ 48300 J
Cyanide	0.28 U	★ [2.2]

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 () Sample Quantitation Limit (SQL).
 ★ Sample values are ≥ to the SQL, ≥ 3x background concentration and ≥ 5x all blank concentrations.

708	2352710
08	24008
A90	MHDA92
W-03	RA-WSW-09
le from ditch uper settling Dolores River	Aqueous sample from spring trickling out into rocks beneath cyanide leach pond. (no sediment) ($\mu\text{g/l}$)
U	234 J
U	3.0 U
U	2.0 U
U	[40.3]
U	1.0 U
U	1.0 U
U	72900
U	1.0 U
U	1.0 U
U	[4.9]
U	537
U	44.7
U	9060
U	45.4
U	0.20 U
U	1.0 U
U	2380 J
U	2.0 U
U	1.0 U
U	[1880]
U	[2.8]
U	1.0 U
U	49.2
U	3.0 U

TABLE 6

Source Aqueous and Sediment Inorganic Sample Results from Settling Ponds
 Concentrations in $\mu\text{g/l}$ or mg/kg

Sample ID: Case #: Traffic Report #: Location: Location Description	2352713 24008 MHDA95 RA-WSE-01 Sediment sample from uppermost settling pond adjacent to the Dolores River (mg/kg)	2352711 24008 MHDA93 RA-WSW-01 Aqueous sample from uppermost settling pond adjacent to the Dolores River ($\mu\text{g/l}$)	2352707 24008 MHDA89 RA-WSE-02 Sediment sample from lowermost settling pond adjacent to the Dolores River (mg/kg)	2352706 24008 MHDA89 RA-WSW-02 Aqueous sample from lowermost settling pond adjacent to the Dolores River ($\mu\text{g/l}$)	2352709 24008 MHDA91 RA-WSE-03 Sediment sample from ditch adjacent to upper settling ponds along the Dolores River (mg/kg)	2352708 24008 MHDA89 RA-WSW-03 Aqueous sample from lowermost settling pond adjacent to the Dolores River ($\mu\text{g/l}$)
Aluminum (Al)	25500 J	3860 J	8560 J	53.3 J	3620 J	72.1
Antimony (Sb)	19.6 UJ	3.0 U	1.8 UJ	3.0 U	0.88 U	3.0
Arsenic (As)	49.4	[6.9]	12.9	2.0 U	10.6	2.0
Barium (Ba)	[94.5]	[23.9]	[44.7]	[13.1]	[54.2]	[48.0]
Beryllium (Be)	13.6	2.3 UJ	1.3 U	1.0 U	0.48 UJ	1.0
Cadmium (Cd)	227	26.4	10.9	[1.9]	[0.32]	1.0
Calcium (Ca)	153000 J	215000	13700 J	206000	5700 J	6710
Chromium (Cr)	[15.5]	[1.9]	13.5	1.0 U	4.2	1.0
Cobalt (Co)	[40.5]	[5.2]	[12.5]	1.0 U	[4.4]	1.0
Copper (Cu)	4250 J	453	69.2 J	[4.2]	12.8 J	4.0
Iron (Fe)	195000 J	28500	19800 J	297	12300 J	360
Lead (Pb)	838 J	172	137 J	1.0 U	19.0 J	1.0
Magnesium (Mg)	[8470]	19800	7530	20200	2290	875
Manganese (Mn)	18600 J	2950	3900 J	820	483 J	33
Mercury (Hg)	1.2 U	0.20 U	0.13 U	0.20 U	0.15 U	0.20
Nickel (Ni)	[63.7]	[10.0]	20.2	[2.4]	[8.2]	1.0
Potassium (K)	[8050]	5050	1660	[4830]	[1240]	[322]
Selenium (Se)	4.8 U	2.0 U	0.54 U	2.0 U	0.59 U	2.0
Silver (Ag)	[8.0]	[1.2]	[2.3]	1.0 U	0.29 U	1.0
Sodium (Na)	2480 UJ	9010	38.0 U	9110	75.8 UJ	[176]
Thallium (Tl)	4.8 U	[4.3]	0.54 U	[3.4]	0.59 U	2.2
Vanadium (V)	[9.0]	[1.5]	[10.5]	1.0 U	[10.1]	1.0
Zinc (Zn)	43900 J	5660	1300 J	351	79.3 J	27.2
Cyanide (CN)	[3.1]	3.0 U	0.20 U	3.0 U	0.22 U	3.0

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TABLE 4
Source Soils and Tailings Inorganic Sample Results
Concentrations in mg/kg

Sample ID: Case #: Traffic Report #: Location: Location Description:	2352703 24008 MHCQ96 RA-WSO-01 Soil sample from abandoned cyanide leach pits along the Dolores River	2352704 24008 MHCQ97 RA-WSO-02 Soil sample from abandoned cyanide leach pits along the Dolores River	2350420 24008 MHDD89 RA-WSO-03 Tailings piles along Silver Creek	2350426 24008 MHDD95 RA-WSO-04 Tailings piles along Silver Creek	2350407 24008 MHDD76 RA-WSO-05 Tailings pile at confluence of Silver Creek and the Dolores River	2350405 24008 MHDD74 RA-WSO-06 Tailings pile along the Dolores River south of Rice	2350406 24008 MHDD75 RA-WSO-07 Tailings along the Dolores River one mile south of Rice	2353404 24008 MHDD35 RA-WSO-08 Opportunity soil sample from soil in the vicinity of fuel tank at the mill site.
Aluminum (Al)	15200 J	8210 J	2770 J	11900 J	9360 J	425 J	6210 J	1270 J
Antimony (Sb)	[7.6]	0.93 UJ	[5.2]	[7.8]	0.66 UJ	1.7 J	[4.8]	14.7
Arsenic (As)	32.1 J	16.7 J	139 J	43.5 J	9.1 J	137 J	43.5 J	343
Barium (Ba)	182	[55.6]	[42.8]	747	55.6	[39.4]	60.3	[20.8]
Beryllium (Be)	1.5	6.0	2.8	1.5	1.2	[0.58]	0.23 U	0.21 U
Cadmium (Cd)	0.25 UJ	68.7	0.24 UJ	19.2	79.1	32.7	4.4	52.5
Calcium (Ca)	4120 J	135000 J	66800 J	34900 J	65900 J	62000 J	9090 J	17200 J
Chromium (Cr)	25.3	5.0	11.6	17.9	13.0	[1.6]	9.3	4.2
Cobalt (Co)	[12.4]	[13.0]	[2.9]	13.7	[10.4]	[2.5]	[1.1]	11.5
Copper (Cu)	233	1070	372	324	215	565	191	299 J
Iron (Fe)	81500 J	62300 J	146000 J	39400 J	31900 J	103000 J	37800 J	229000 J
Lead (Pb)	833 J	165 J	5130 J	2170 J	4100 J	13300 J	3610 J	9450 J
Magnesium (Mg)	11500	11500	2120	33700	9540	[107]	5830	1300
Manganese (Mn)	2130 J	6010 J	1410 J	12300 J	3980 J	62.3 J	213 J	736 J
Mercury (Hg)	0.16	0.16 U	0.12 U	0.30	0.48	0.21	0.37	0.10 U
Nickel (Ni)	24.7	19.1	[4.5]	27.2	15.7	[2.7]	[4.6]	17.0
Potassium (K)	3290 J	1040 J	3410	2320	1450 J	2180	2420	1740
Selenium (Se)	2.2	0.62 U	5.6	1.1 J	0.44 U	3.5	2.5 J	14.5
Silver (Ag)	28.0	3.3	21.8	127	30.9	45.7	17.7	31.6
Sodium (Na)	38.6 UJ	44.2 UJ	34.7 UJ	34.9 UJ	31.4 UJ	33.9 UJ	33.3 UJ	[934]
Thallium (Tl)	4.7 J	2.7 UJ	4.9	2.2 UJ	1.3 UJ	10.4	1.8 UJ	1.8 J
Vanadium (V)	19.9	[3.4]	23.6	17.5	16.5	[1.8]	12.0	[3.1]
Zinc (Zn)	691 J	14900 J	1850 J	2960 J	10400 J	5450 J	915 J	9870 J
Cyanide (CN)	4.6	0.23 U	4.2	5.4	[0.20]	[0.40]	0.18 U	[0.22]

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From: Paul Meyers

Please transmit the following pages to

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Company: U.S. Environmental Protection

FAX: 13033126962

Total number of pages (including cover sheet): 1

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Our RiverCAD product, a 3D graphical HEC-2 and HEC-RAS modeling software package, is used by the U.S. Army Corps of Engineers, USGS, SCS, USDA Forest Service, US DOT, US FERC, state and local government regulatory agencies, and consultants all over the world.

RiverCAD operates in Microsoft Windows and provides a self-contained 3D CAD System for performing HEC-2 and HEC-RAS modeling. With RiverCAD, you can construct a cross-section from a contour map, TIN, or DTM by simply drawing a line. The software will then compute the water surface profile and display the floodplain results directly on top of the map, showing the extent of the water surface with regard to the ground topography. And, cross-section plots and profile plots are instantly created, plotted to scale--ready for review submittal. In addition, RiverCAD can perform bridge scour analysis, read-in FEMA Q3 maps, and generate digital GIS FIRM maps.

I can provide you an actual working copy of our RiverCAD software program along with complete documentation--at no obligation (basically FREE)--allowing you to try out the software on your real world projects. In addition to RiverCAD, we have many other software applications that hydraulic engineers and hydrologists use all over the world. If you are interested in RiverCAD, or any of our other software applications, please contact me. I look forward to hearing from you.

Sincerely,

Paul Meyers

Software Account Manager

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